

**INTERLACE OVERLAP PIXEL DESIGN FOR HIGH
SENSITIVITY CMOS IMAGE SENSORS**

ABSTRACT

5 *IAS*
AY A structure of image sensor for sensing the light of an image impinging thereupon and for translating the image into a standard television format is disclosed.

10 The structure comprises a plurality of pairs of light-detecting elements arranged in rows and columns for generating respective analog signals in proportion to the intensity of the light impinging on respective one of the light-detecting elements, a first and second photodiodes in each pairs of light-detecting elements are coupled in parallel in the column direction at a floating sensing point through at least one turn-on transistor, and the first and second photodiodes in adjacent pairs of light-detecting elements are coupled in parallel in the column direction through at least one turn-on transistor such that the at least one turn-on transistors coupled to the first and second photodiodes are sequentially controlled by a first and second gate control lines coupled to the gate of the at least one turn-on transistors, respectively and analog signals acquired in the first and second photodiodes of one of the same pairs and the adjacent pairs presents at the floating sensing point in response to one of the first and second gate control lines, thereby enhancing the light sensitivity of the image sensor.

25 The analog signals acquired in the photodiodes controlled by the first gate control lines constitute first field signals and the analog signals acquired in the photodiodes controlled by the second gate control lines constitute second field signals, wherein the components of the first field and second signals are correlated with one another and the time difference thereof is less than 1/60 second, thereby improving the quality of the image displayed in a television connected to the image sensor.